CPP 程式設計題

命題者：PWC

題目名稱(中文/英文)：文件格式實作(Document)

主要測試觀念： class 繼承

Basics		Functions	
☐	C++ BASICS 1	☐	SEPARATE COMPILATION AND NAMESPACES
☐	FLOW OF CONTROL	☐	STREAMS AND FILE I/O
☐	FUNCTION BASICS	☐	RECURSION
☐	PARAMETERS AND OVERLOADING	■	INHERITANCE
☐	ARRAYS	☐	POLYMORPHISM AND VIRTUAL FUNCTIONS
■	STRUCTURES AND CLASSES	☐	TEMPLATES
☐	CONSTRUCTORS AND OTHER TOOLS	☐	LINKED DATA STRUCTURES
■	OPERATOR OVERLOADING, FRIENDS, AND REFERENCES	☐	EXCEPTION HANDLING
☐	STRINGS	☐	STANDARD TEMPLATE LIBRARY
☐	POINTERS AND DYNAMIC ARRAYS	☐	PATTERNS AND UML

題目說明： Define a class named `Document` that contains a member variable of type `string` named `text` that stores any textual content for the document. Create a method named `getText` that returns the text field, a way to set this value, and an overloaded assignment operator.

Next, define a class for `Email` that is derived from `Document` and includes member variables for the `sender`, `recipient`, and `title` of an email message. Implement appropriate accessor and mutator methods. The body of the email message should be stored in the inherited variable `text`. Also overload the assignment operator for this class.

Similarly, define a class for `File` that is derived from `Document` and includes a member variable for the `pathname`. Implement appropriate accessor and mutator methods for the pathname and overload the assignment operator.

Finally, create several sample objects of type `Email` and `File` in your main method. Test your objects by passing them to the following subroutine that returns true if the object contains the specified keyword in the text property.

```
bool ContainsKeyword(const Document& docObject, string keyword)
{
   if (docObject.getText().find(keyword) != string::npos)
       return true;
   return false;
}
```

For example, you might test to see if an email message contains the text "c++" with the call `ContainsKeyword(emailObj, "c++");`

輸入說明：No Input for this Problem, but we will change different main function to test your Code.

輸出說明：Depends on the output of testing main function.

IO 範例 ：

	Sample Input	Sample Output
第一組測資與輸出	Input-main1.cpp	output1.txt
第二組	Input-main 2.cpp	output2.txt
第三組	Input-main 3.cpp	output3.txt

附屬資料：

☑解答程式：document.h, document.cpp, email.h, email.cpp, file.h, file.cpp

☑測試資料：Input-main1.cpp, output1.txt, Input-main2.cpp, output2.txt, Input-main3.cpp, output3.txt

■ 易，僅需用到基礎程式設計語法與結構

□中，需用到多項程式設計語法與結構

□難，需用到多項程式結構或較為複雜之資料型態或結構

解題時間：30 分鐘。

其他註記：

(1)本題的相關檔案如下(僅供參考)

Input-main1.cpp:

```
int main()
{
   // Create several test objects
   Email email1("Body about programming in C++",
      "Larry", "Curly", "Programming");
   Email email2("Body about running marathons",
      "Speedy", "Gonzales", "races");

   File file1("Contents about some C++ file", "file.txt");
   File file2("Contents about marathon races", "run.txt");

   cout << "Which contains C++?" << endl;
   if (ContainsKeyword(email1, "C++")) cout << " Email1" << endl;
   if (ContainsKeyword(email2, "C++")) cout << " Email2" << endl;
   if (ContainsKeyword(file1, "C++")) cout << " File1" << endl;
   if (ContainsKeyword(file2, "C++")) cout << " File2" << endl;

   // Test our assignment operator
   file2 = file1;
   file2.setPathname("c:");
   cout << "After assignment file2=file1 and
file2.setPathname(\"c:\"): "
      << endl;
   cout << "File1's path = " << file1.getPathname() << endl;
   cout << "File2's path = " << file2.getPathname() << endl;

   return 0;
}
```

output1.txt:

Which contains C++?

Email1

File1

After assignment file2=file1 and file2.setPathname("c:"):

File1's path = file.txt

File2's path = c: